

Application Serial No.: 09/734,591
Reply to Office Action dated July 5, 2006, and
Advisory Action dated September 22, 2006

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-34 are presently active in this case, Claims 1, 12, 23, and 34 having been amended by way of the present Amendment. No new matter has been entered.

In the outstanding Official Action, Claims 1-3, 5, 6, 12-14, 16, 17, 23-25, 27, 28, and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda (U.S. Patent No. 6,285,470) in view of Zuniga (U.S. Patent No. 5,280,367). Claims 4, 15, and 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Jin (U.S. Patent No. 5,880,858). Claims 7-9, 18-20, and 29-31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Dhawan (U.S. Patent No. 5,271,064). Claims 10, 21, and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Saito (U.S. Patent No. 5,966,455). Claims 11, 22, and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda in view of Zuniga and Allen (U.S. Patent No. 6,044,172). For the reasons discussed below, the Applicant requests the withdrawal of the obviousness rejections.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or

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suggest all of the claim limitations. The Applicant submits that a *prima facie* case of obviousness cannot be established in the present case because the references, either taken singularly or in combination, do not teach or suggest all of the limitations recited in independent Claims 1, 12, 23, and 34.

The Applicant respectfully submits that the cited references, either when taken singularly or in combination, fail to teach or suggest edge-detection of a digital color original image obtained by digitally inputting only a single side of a document color-printed on both sides of paper, estimating background color of the paper or background color image on the single side based upon edge-detection information from the single side of the document with respect to a portion with low intensity of the detected edge from the single side of the document, performing color threshold processing in which the portion with the low edge intensity as a component corresponding to show-through of an image from an opposite side of the document is replaced with the estimated background color or background color image in the original image, and generating a show-through removed image as an image from which the component corresponding to the show-through has been removed without using the image from the opposite side of the document, in the manner recited in Claims 1, 12, 23, and 34.

Each of Claims 1, 12, 23, and 34 recite inventions that include steps or apparatuses for generating a show-through removed image as an image from which the component corresponding to the show-through has been removed without using the image from the opposite side of the document. Thus, it is unnecessary to scan the opposite side of the document in order to generate a quality reproduction of the original image on the single side

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of the document, even if a show-through of the image on the opposite side is present on the single side of the document. Accordingly, this invention provides for the quality reproduction of an image on a side of a document printed on both sides without the need for specific input equipment, such as a double-side scanner, a book scanner, etc. (See, e.g. page 10, lines 12-24.) The Applicant notes that the Matsuda et al. reference and the Zuniga reference, either when taken singularly or in combination, fail to describe or suggest such features.

The Official Action acknowledges that the Matsuda et al. reference does not disclose background color estimation based solely upon edge-detection information from a single side of the document with respect to a portion with low intensity of the detected edge from the single side of the document, among other features. The Applicant further submits that the Matsuda et al. reference does not disclose generating a show-through removed image as an image from which a component corresponding to the show-through has been removed without using the image from the opposite side of the document. In fact, the Matsuda et al. reference describes an invention that, while indicated as being capable of detecting the existence of show-through on a front side of a document, requires the user to scan the opposite side of the document in order to remove or reduce the show-through effect from the opposite side on the front side. (See, e.g., column 9, lines 48-50.)

The Matsuda et al. reference provides the user with various options if the existence of show-through is detected, and each option has certain benefits and certain disadvantages. For example, the Matsuda et al. reference allows the user to select an option where the show-

through image is not removed but the copy has high reproduction quality, or an option where the show-through image is removed but the copy has lower reproduction quality. (See column 2, lines 50-53; column 8, line 65, through column 9, line 9; column 9, lines 41-47.) If the user selects the option where the show-through image is removed, then the back side image is obtained and then subtracted from the front side image. Thus, the Matsuda et al. reference does not disclose or suggest steps or apparatuses for generating a show-through removed image as an image from which the component corresponding to the show-through has been removed *without using the image from the opposite side of the document*. In fact, the Matsuda et al. reference teaches away from such a feature, and provides an image reading apparatus that is specifically designed to allow for accurate image reading from above of both sides of a document contained in a book or file having some thickness in order for accurate scanning of the back side. (See, e.g., column 2, lines 31-34; column 3, line 57, through column 4, line 5; column 9, lines 28-34; and also see column 2, lines 1-26.)

The Applicant submits that the Zuniga reference fails to supplement the deficiencies in the teachings of the Matsuda et al. reference. The Zuniga reference describes a system that converts a scanned image of a complex document into an image where text has been preserved and separated from the background. The Zuniga reference does not specifically discuss what to do to remove show-through. The Zuniga reference mentions in passing the possibility that very light text or text showing through from the back might be present in a scan block (column 4, lines 48-54); however, the Zuniga reference never again mentions how show-through text would be differentiated from very light text, which is obviously intended

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to be retained as text in the final scanned document. When scanned information is being examined in the Zuniga reference, it compares the pixel of the information being examined to pixels around it in order to determine whether they have certain gray scale levels, and if so then they are considered to be background, "since background would normally be adjacent to text." (Column 8, lines 1-65.) Thus, the Zuniga reference would analyze and retain in the final scanned document not only very light text, but also text showing through from the back, since these are indicated by the Zuniga reference as being indistinguishable (column 4, lines 52-54) and no specifically teaching of the removal of the show-through text is presented in the Zuniga reference. Accordingly, the Zuniga reference does not disclose generating a show-through removed image as an image from which the component corresponding to the show-through has been removed without using the image from the opposite side of the document, in the manner recited in Claims 1, 12, 23, and 34.

Thus, the Applicant respectfully submits that the cited references, either when taken singularly or in combination, fail to teach or suggest all of the limitations recited in independent Claims 1, 12, 23, and 34. Accordingly, the Applicant respectfully requests the withdrawal of the obviousness rejection of the independent claims.

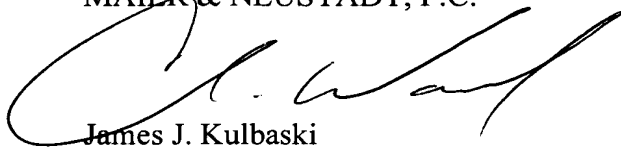
Claims 2-11, 13-22, and 24-33 are considered allowable for the reasons advanced for Claims 1, 12, and 23 from which they respectively depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, nor suggested by the applied references when those features are considered within the context of Claims 1, 12, and 23.

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Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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